

In the Claims

This listing of all claims will replace all prior versions, and listings, of claims in the application:

1. (original) A steel wire for cold forging, which has excellent low temperature impact properties, comprising 0.10 – 0.40 wt% C, 1.0 wt% or less of Si, 0.30 – 2.0 wt% Mn, 0.03 wt% or less of P, 0.03 wt% or less of S, and a balance of Fe and impurities, wherein an austenite grain size is 5 – 20 μm , impact absorption energy is 60 J/cm² or more at –40°C, and tensile strength is 70 – 130 kgf/mm².

2. (original) The steel wire as set forth in claim 1, further comprising at least one component selected from the group consisting of 0.05 – 2.0 wt% Cr, 0.05 – 1.5 wt% Mo, and 0.0003 – 0.0050 wt% B.

3. (currently amended) A method of producing a steel wire for cold forging, ~~which has excellent low temperature impact properties,~~ comprising:

~~rapidly~~ heating steel, which contains 0.10 – 0.40 wt% C, 1.0 wt% or less of Si, 0.30 – 2.0 wt% Mn, 0.03 wt% or less of P, 0.03 wt% or less of S, and a balance of Fe and impurities, to a Ac3 transformation point or higher, without plastic deformation, so that an austenite grain size is 5 – 20 μm ;

cooling the heated steel; and

heat treating the cooled steel in such a way that tensile strength is 70 – 130 kgf/mm² at a tempering parameter (P) ranging from 21,800 to 30,000,

which is expressed by a following Equation 1, so that impact absorption energy is 60 J/cm² or more at −40°C,

Equation 1

$$P = 1.8 \times (T + 273) \times (14.44 + \log t)$$

wherein, T is a tempering temperature (°C), and t is a tempering time (sec).

4. (original) The method as set forth in claim 3, wherein the steel further comprises at least one component selected from the group consisting of 0.05 – 2.0 wt% Cr, 0.05 – 1.5 wt% Mo, and 0.0003 – 0.0050 wt% B.